

D 11229

(Pages : 3)

Name

Reg. No.....

FIFTH SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2016

(CUCBCSS—UG)

Microbiology

MBY 5B 08—INDUSTRIAL MICROBIOLOGY

Time : Three Hours_____

Maximum : 80 Marks

Draw diagrams wherever necessary.

Part A

I. Choose the correct answer :

1 Which of the following can be patented ?

- | | |
|--------------|----------------------------|
| (a) Machine. | (b) Composition of matter. |
| (c) Process. | (d) All of the above. |

2 A continuous **bioreactor** in which only the flow rate is used to control the rate of cell or product productivity is called :

- | | |
|-------------------------|------------------------|
| (a) Turbidostat. | (b) Level state. |
| (c) Chemostat. | (d) None of the above. |

3 The sequence of events in industrial production of a substance through microbial fermentation is:

- | |
|--|
| (a) Removal of impurities, Inoculation, Fermentation, Downstream processing. |
| (b) Fermentation, Downstream processing, Removal of impurities, inoculation. |
| (c) Inoculation, Downstream processing, Fermentation, Removal of impurities. |
| (d) Inoculation, Fermentation, Downstream processing, Removal of impurities. |

4 Which of the following is non-mechanically agitated reactor ?

- | | |
|---------------------------|------------------------------------|
| (a) Stirred-tank reactor. | (b) CSTR. |
| (c) Air Lift reactor. | (d) Rotating biological contactor. |

II. Fill in the blanks :

5 Intellectual property rights protect the use of information and ideas that are of _____

6 The precursor used in the penicillin G production is _____

7 Common bacterial strain used for lactic acid production from whey media is _____

8 _____ type of geographical indication is given to Alleppey **coir**.

Turn over

III. Answer in *one* word :

- 9 Symbol of Maharaja of Air India is a :
- 10 Name two moulds used for production of progesterone by transformation.
- 11 Which vinegar process use Fringes generator ?
- 12 The screening technique used for identifying growth factor producing microbial strains is :
- (12 x ½ = 6 marks)

Part B

Answer **all** of the following in two to three sentences each.
Each question carries 2 marks.

- 13 *Clostridium acetobutylicum*.
- 14 Supercritical fluid extraction.
- 15 Corn steep liquor.
- 16 Impellers.
- 17 Hollow fibre reactors.
- 18 Heterolactic fermenters.
- 19 Filter aids.
- 20 *Penicillium chrysogenum*.
- 21 Antifoam agents.
- 22 Solid state fermentation.

(10 x 2 = 20 marks)

Part C

Write short notes on any **six** of the following.
Each question carries 5 marks.

- 23 Computer application in fermentation technology.
- 24 Types of IPR.
- 25 Methods for separation of biomass and solids from fermentation broth.

- 26 Downstream processing of penicillin.
- 27 Steroid transformation.
- 28 Vinegar production.
- 29 World intellectual property rights organization.
- 30 Culture preservation techniques.

(6 x 5 = 30 marks)

Part D

*Write essays on any two of the following.
Each question carries 12 marks.*

- 31 Discuss the design of a **bioreactor**. Add a note control systems used in a **bioreactor**.
- 32 Describe industrial production of microbial a amylase.
- 33 What are the ideal characteristics of microbial strain used for industrial production of a substance ? Discuss the methods for improving strains for industrial applications.

(2 x 12 = 24 marks)